Hydronic Hydronic Energy Length Diameter Thickness Conductivity

Type Delivery (Watts) (ft) (in) (in) (Btu/Hr-ft-F)

1 SmallStor Combined Radiant n/a 350 1.25 0.75 0.023

SPECIAL FEATURES AND MODELING ASSUMPTIONS

*** Items in this section should be documented on the plans. *** *** installed to manufacturer and CEC specifications, and ***

This building incorporates a Combined Hydronic Space and Water Heating System.

*** verified during plan check and field inspection.

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD CF-1R Page 5 Mandatory Measures Summary roject Title...... TOMLIN RESIDENCE+GARAGE Date..08/01/13 15:20:5 User#-MP0113 User-Monterey Energy Group Run-R-49 30R R-48W R-0SE 2P G R-5 slab insulation to a depth of 16 inches is required for hydronic radiant floor systems in a concrete slab-on-grade. The insulation is treated as an Submit all applicable sections of the MF-1R Form with plans. energy neutral feature and is not modeled for compliance credit. R-0 must be Building Envelope Measures: manufactured to limit air leakage. CF-1R Page Project Title...... TOMLIN RESIDENCE+GARAGE Date..08/01/13 15:20:5 95(2000) when specified on the CF-1R Form. \$150(g): Mandatory Vapor barrier installed in Climate Eores 14 or 16. User#-MP0113 User-Monterey Energy Group Run-R-49 30R R-48W R-0SE 2P G shall be protected from physical damage and UV light deterioration. Fireplaces, Decorative Gas Appliances and Gas Log Measures: This certificate of compliance lists the building features and performance specifications needed to comply with Title-24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with DOCUMENTATION AUTHOR prohibited.

Space Conditioning, Water Heating and Plumbing System Measures Address. 227 Forest Ave., Suite 5 Pacific Grove, CA 93950 Davil W. Knight 8/1/13 requirements of Section 112(c). nsulated per Standards Table 150-B. ACR Page 50-B and Equation 150-A. psi, meets the requirements of Standards Table 123-A. Project Title...... TOMLIN RESIDENCE+GARAGE Date..08/01/13 15:20:51 User#-MP0113 User-Monterey Energy Group Run-R-49 30R R-48W R-0SE 2P G vapor retardant or is enclosed entirely in conditioned space. Mandatory Measures Summary ----- CPUC kW -----Stand. Prop. Percent Stand. Prop. Percent Design Design Margin Improve Design Design Margin Improve Rating and Certification Corporation. Space Heating... 10.75 7.55 3.20 29.8% 0.00 0.00 0.00 0.0% Space Cooling... 1.02 0.00 1.02 100.0% 0.58 0.20 0.38 65.5% Ducts and Fans Measures: Ventilation Fans 0 47 0 47 0 00 0 0% 0 00 0 00 0 00% \$150(m) 1: All air-distribution syste Water Heating... 7.73 6.79 0.94 12.2% 0.00 0.00 0.00 0.0% Total 19.97 14.81 5.16 25.8% 0.58 0.20 0.38 65.5% ----- Therms ----- kWh -----Design Design Margin Improve Design Design Margin Improve 0 0 0 0.0% 4898 3402 1496 30.5% 0 0 0 0.0% 210 0 210 100.0% 0 0 0 0.0% 188 188 0 0.0% Water Heating... 287 0 287 100.0% 0 2659 -2659 0.0% mastic and draw bands. §150(m)7: Exhaust fan systems have back draft or automatic dampers. 287 0 287 100.0% 5296 6249 -953 -18.0% readily accessible, marmally operated dampers. radiation that can cause degradation of the material. §150(m)10: Flexible ducts cannot have porous inner cores. Electricity Incentive...... $$0.74 \text{ /kWh} \times -953 \text{ kWh} = -705 Demand Incentive...... \$129.00 /kW x 0.38 kW = \$ 49 Natural Gas Incentive...... \$ 2.95 /Therm x 287 Therms = \$ 847 x \$ 191 Base = \$ 19 x \$ 191 Base = \$ 19 for future solar heating x \$ 191 Base = \$ NSHP Tier II Incentive..... \$ 0 /unit x 1 units = \$ electric demand periods. Total Incentive for front facing 8 deg..... = \$ 229 filters, and valve requirements of §150(p). Residential Lighting Measures: fficacy luminaire as specified by §150(k)2. . TOMLIN RESIDENCE+GARAGE Date..08/01/13 15:20:51 | Plan Check / Date User#-MP0113 User-Monterey Energy Group Run-R-49 30R R-48W R-0SE 2P G lighting in kitchens shall be high efficacy. than 20 watts of power per linear foot of illuminated laundry rooms, closets and utility rooms shall be high efficacy. Mandatory Measures Summary Enforcement Agency: EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by a manual-on occupant sensor certified to comply with the applicable requirements of §119. EXCEPTION 2: Permanently installed low efficacy luminaires in closets less than 70 square feet are not required to be controlled by a manual-on occupant sensor. §150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of \$119.

EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on _____ a residential site is not required to comply with \$150(k)11. §150(k)12: Luminaires recessed into insulated ceilings shall be listed for mero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the luminaire is

MF-1R (Page 1 of 3) NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. Morn ingent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. §116(a) 1: Doors and windows between conditioned and unconditioned spaces are \$116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a). §117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed. §118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of \$118(i) when the installation of a Cool Roof is specified on \$150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor *§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor §150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-§150(1): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and §150(e) 1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox. \$150(e) 1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device. 150(e) 2: Continuous burning pilot lights and the use of indoor air for cooling a §110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission. \$113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.
§115: Continuously burning pilot lights are prohibited for natural gas:fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and \$150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA §150(i): Heating systems are equipped with thermostats that meet the setback \$150 (j) 1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar waterheating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of §150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, nonrecirculating systems, and entire length of recirculating sections of hot water pipes are §150(j)2: Cooling system piping (suction, chilled water, or brine lines), and piping insulated between heating source and indirect hot water tank shall be insulated to Table \$150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 \$150(j)3A: Insulation is protected from damage, including that due to sunlight moisture, equipment maintenance, and wind. \$150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a MF-1R (Page 2 of 3) §150(j) 4: Solar water-heating systems and/or collectors are certified by the Solar 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used §150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m) 2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with \$150(m)8: Gravity ventilating systems serving conditioned space have either automatic or \$150(m)9: Insulation shall be protected from damage, including that due to sunlight moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar \$150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2 2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light. \$114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections 114(b) 2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover. \$114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak \$150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, §150(k) 1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low §150(k)3: The wattage of permanently installed luminaires shall be determined as §150(k) 4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five waits of power as determined by §130(d), and shall not contain a medium screw-base socket. §150(k) 6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of \$150(k).
\$150(k)7: All switching devices and controls shall meet the requirements of \$150(k)7. \$150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft2 or 100 watts for dwelling units larger than 2,500 ft2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor. \$150(k)9: Permanently installed lighting that is internal to cabinets shall use no more §150(k) 10: Permanently installed luminaires in bathrooms, attached and detached garages, MF-IR

airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios

EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed

an override or bypass switch that disables the motion sensor, and one of the following

control; CR an astronomical time clock not having an override or bypass switch that

having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to \$150(k)13 may be

controlled by a temporary override switch which bypasses the motion sensing function

provided that the motion sensor is automatically reactivated within six hours.

EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water

provided that they are controlled by a manual on/off switch, a motion sensor not having

disables the astronomical time clock; OR an energy management control system (EMCS) not

features, or other location subject to Article 680 of the California Electric Code need

not be high efficacy luminaires. \$150(k)14: Internally illuminated address signs shall comply with Section 148; OR not

contain a screw-base socket, and consume no more than five watts of power as determined

per site shall comply with the applicable requirements in Sections 130, 132, 134, and

requirements of Sections 130, 131, 134, and 146 \$150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-

EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that

they are controlled by an occupant sensor(s) certified to comply with the applicable

requirements of \$119.

rise residential buildings with four or more dwelling units shall be high efficacy

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles

147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable

controls: a photo control not having an override or bypass switch that disables the photo

in low-rise residential buildings with four or more dwelling units, entrances, balconies,

ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and

and porches, which are permanently mounted to a residential building or to other

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD CF-1R Page 1 TOMLIN DETACHED GARAGE Date..01/31/13 13:59:27 ***** .. 19 LA RANCHERIA Project Address..... CARMEL VALLEY, CA. 93924 *v8.1* ***** | Building Permit # ocumentation Author ... DAVID KNIGHT Monterey Energy Group | Plan Check / Date 227 Forest Ave., Suite 5 Pacific Grove, CA 93950 831-372-8328 Climate Zone... Compliance Method..... MICROPAS8 v8.1 for 2008 CEC Standards (r03) MICROPAS8 v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G MICROPASS ENERGY USE SUMMARY Standard Proposed Compliance Percent Energy Use Design Design Margin Improvement (kTDV/sf-vr) 28.02 19 17 Space Heating. 8.85 31.6% Space Cooling. 1.99 0.83 1.16 58.3% Ventilation Fans.. 1.26 0.00 0.0% Water Heating....... 30.14 17.37 12.77 42.4% received access (section) access Total 61.41 38.63 22.78 37.1% *** Building complies with Computer Performance *** HERS Verification..... Not Required Conditioned Floor Area.... 960 sf Single Family Detached Building Type..... Construction Type Natural Gas at Site Building Front Orientation. Front Facing 278 deg (W) Number of Dwelling Units... 1 Number of Building Stories. 1 Weather Data Type..... FullYear Floor Construction Type.... Slab On Grade Number of Building Zones... 1 Conditioned Volume..... 12480 cf Slab-On-Grade Area.. 960 sf 8 6 % of floor area Glazing Percentage.. Average Glazing U-factor... 0.35 Btu/hr-sf-F Average Glazing SHGC..... 0.35 Average Ceiling Height.... CF-1R Page 2 CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD Project Title...... TOMLIN DETACHED GARAGE Date..01/31/13 13:59:27 MICROPASS v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G BUILDING ZONE INFORMATION Floor # of # of Cond- Thermo- Vent Vent Verified Area Volume Dwell Peop- it- stat Height Area Leakage or (sf) (cf) Units le ioned Type (ft) (sf) Housewrap Residence 960 12480 1.00 4.0 Yes Setback 2.0 Standard Housewrap OPAQUE SURFACES U- Sheath- Solar Appendix Frame Area fact- Cavity ing Act Gains JA4 Location/ Type (sf) or R-val R-val Azm Tilt Reference Comments Wood 264 0.035 30 10 278 90 Yes 4.3.1 G10 1 Wall Wood 281 0.035 30 10 8 90 Yes 4.3.1 G10 2 Wall Wood 460 0.035 30 10 98 90 Yes 4.3.1 G10 3 Wall 4 Wall Wood 261 0.035 30 10 188 90 Yes 4.3.1 G10 5 Roof Wood 1000 0.028 38 0 n/a 0 Yes 4.2.2 A42 6 Door Wood 216 0.500 0 0 278 90 Yes 4.5.1 A4 Wood 20 0.500 0 0 188 90 Yes 4.5.1 A4 PERIMETER LOSSES Length F2 Insul Solar JA4 Location/ Surface R-val Gains Reference Comments (ft) Factor 8 SlabEdge 128 0.730 R-0/0in No 4.4.7 A1 Standard Slab Edge FENESTRATION SURFACES Exterior Shade (sf) factor SHCC Azm Tilt Type Location/Comments Wind Left (N) 31.3 0.350 0.350 8 90 Standard LGLASS1 2 Wind Back (E) 20.0 0.350 0.350 98 90 Standard BGLASS1 3 Wind Right (S) 31.3 0.350 0.350 188 90 Standard RGLASS1 CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD CF-1R Page : Project Title...... TOMLIN DETACHED GARAGE Date..01/31/13 13:59:2' MICROPAS8 v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G SLAB SURFACES Standard Slab 960 Verified Verified Verified Maximum Refrig Charge Adequate Fan Watt Cooling Efficiency EER or CID Airflow Draw Capacity 0.899 AFUE n/a n/a n/a n/a 13.00 SEER No HVAC SIZING ______ Verified Sensible Design Maximum Heating Cooling Cooling Cooling Load Capacity Capacity (Btu/hr) (Btu/hr) (Btu/hr) (Btu/hr) Hydronic 18558 n/a n/a n/a n/a Sizing Location..... CARMEL VALLEY Winter Outside Design..... 25 I Winter Inside Design . . . Summer Outside Design . . Summer Inside Design... Summer Range..... DUCT SYSTEMS Verified Verified Verified Duct Surface Buried R-value Leakage Area Ducts Location Hydronic R-n/a n/a CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD CF-1R Page 4 MICROPASS v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G (Page 3 of 3) FAN SYSTEMS _____ Flow Power (cfm) (W/cfm) 39.6 .25

WATER HEATING SYSTEMS

1 LargeTankless Gas Recirc/DemandManual 1 n/a n/a R- n/a

Efficiency

modeled in this climate zone.

WATER HEATING SYSTEMS DETAIL

HYDRONIC PIPING AND SPACE HEATING DETAIL

1 LargeTank Combined Radiant n/a 25 0.75 0.75 0.023

SPECIAL FEATURES AND MODELING ASSUMPTIONS

*** Items in this section should be documented on the plans. ***

*** installed to manufacturer and CEC specifications, and ***

This building incorporates a Combined Hydronic Space and Water Heating System.

R-5 slab insulation to a depth of 16 inches is required for hydronic radiant

floor systems in a concrete slab-on-grade. The insulation is treated as an

energy neutral feature and is not modeled for compliance credit. R-0 must be

*** verified during plan check and field inspection.

This building incorporates a Housewrap/Air Infiltration Retarder.

This building incorporates a non-standard Water Heating System.

Type Distribution Type System Factor (gal) R-value

Input Fraction R-value

0.90 150000 Btuh n/a R- n/a n/a

Hydronic Hydronic Energy Length Diameter Thickness Conductivity

Type Delivery (Watts) (ft) (in) (in) (Btu/Hr-ft-F)

Standby Internal Tank

Loss Insulation Pilot

Pump Pipe Pipe Insulation Insulation

in Energy Size Insulation

CERTIFICATE OF COMPLIANCE: RESIDENTIAL COMPUTER METHOD CF-1R Page 5 Project Title...... TOMLIN DETACHED GARAGE Date..01/31/13 13:59:2' MICROPASS vs.1 File-TOM.INGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G REMARKS COMPLIANCE STATEMENT This certificate of compliance lists the building features and performance specifications needed to comply with Title-24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. DOCUMENTATION AUTHOR Name.... MACKENZIE PATTERSON Name.... DAVID KNIGHT Company. MACKENZIE PATTERSON ARCH. Company. Monterey Energy Group Address. P.O. BOX 2497 Address. 227 Forest Ave., Suite 5 CARMEL, CA. 93921 Pacific Grove, CA 93950 Phone... (831) 624-4853 Phone... 831-372-8328 License. Davil W. Knight 01/31/13 Signed.. Signed.. (date) ENFORCEMENT AGENCY ABOVE CODE REPORT: RESIDENTIAL COMPUTER METHOD ACR Page 1 Project Title..... TOMLIN DETACHED GARAGE Date 01/31/13 13:59:27 MICROPASS v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G MICROPASS ENERGY USE SUMMARY

----- CPUC kW -----Stand. Prop. Percent Stand. Prop. Percent Design Design Margin Improve Design Design Margin Improve Space Heating... 28.02 19.17 8.85 31.6% 0.00 0.00 0.00 0.0% Space Cooling... 1.99 0.83 1.16 58.3% 0.25 0.11 0.14 55.1% Ventilation Fans 1.26 1.26 0.00 0.0% 0.00 0.00 0.00 0.0% Water Heating... 30.14 17.37 12.77 42.4% 0.00 0.00 0.00 0.0% parada parada parada parada andara adara adara sa da cara da c Total 61.41 38.63 22.78 37.1% 0.25 0.11 0.14 55.1% ----- Therms ------ kWh -----Stand. Prop. Percent Stand. Prop. Design Design Margin Improve Design Design Margin Improve Space Heating... 157 106 51 32.5% 196 152 44 22.5% Space Cooling... 0 0 0 0.0% 68 33 36 52.0% Ventilation Fans 0 0 0 0.0% 86 86 0 0.0% Water Heating... 195 112 83 42.4% 0 0 0 0.0% Total 352 218 134 38.0% 351 271 80 22.7% CALIFORNIA ADVANCED HOMES INCENTIVE CALCULATION Single Family Detached Total Floor Area. . 960 ft2 Number of Dwelling Units... Number of Bedrooms.. Total Percent Above Code..... 37.1% (15% minimum for base incentive) Cooling Percent Above Code... 58.3% (30% minimum for NSHP Tier II) Electricity Incentive...... \$ 1.06 /kWh x 80 kWh = \$ Demand Incentive...... \$185.50 /kW x 0.14 kW = \$ Natural Gas Incentive...... \$ 4.24 /Therm x 134 Therms = \$ Base Incentive.. = \$ 679 Energy Star Incentive..... 10% x \$ 679 Base = \$ 679 Base = \$ Green Home Incentive..... 10% × \$ Compact Home Incentive..... x \$ 679 Base = \$ Photovoltaic Incentive...... \$ 0.00 /kW x 0.00 DC kW = NSHP Tier II Incentive..... \$ 0 /unit x 1 units = \$

Total Incentive for front facing 278 deg.....

HVAC SIZING

Project Title ...

Project Address.

| Building Permit # Documentation Author... DAVID KNIGHT ***** Monterey Energy Group | Plan Check / Date 227 Forest Ave., Suite 5 Pacific Grove, CA 93950 Field Check/ Date 831-372-8328 Climate Zone.. Compliance Method.. .. MICROPASS v8.1 for 2008 CEC Standards (r03) MICROPASS v8.1 File-TOMLINGARAGE Wth-CTZ03S08 User#-MP0113 User-Monterey Energy Group Run-R-38R R-40W R-0SE 2P G GENERAL INFORMATION Floor Area. Volume ... 12480 cf . Front Facing 278 deg (W) Front Orientation. . Sizing Location ... CARMEL VALLEY Latitude... 36.5 degrees Winter Outside Design. Winter Inside Design. Summer Outside Design.. Summer Inside Design... Interior Shading Used. Exterior Shading Used . . Overhang Shading Used.. Latent Load Fraction..... 0.14 HEATING AND COOLING LOAD SUMMARY Heating Cooling

. TOMLIN DETACHED GARAGE

CARMEL VALLEY, CA. 93924 *v8.1*

. 19 LA RANCHERIA

HVAC Page 1

Date..01/31/13 13:59:27

Description (Btu/hr) (Btu/hr) 14049 Opaque Conduction and Solar Glazing Conduction and Solar . . 1301 Infiltration . . 3209 Internal Gain. n/a 1516 18558 n/a 1373 Latent Load..... Minimum Total Load 18558 10780

Note: The loads shown are only one of the criteria affecting the selection of HVAC equipment. Other relevant design factors such as air flow requirements, outside air, outdoor design temperatures, coil sizing, availability of equipment, oversizing safety margin, etc., must also be considered. It is the HVAC designer's responsibility to consider all factors when selecting the HVAC equipment.

(Page 1 of 3) Enforcement Agenc

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures: \$116(a) 1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.
\$116(a) 4: Ferestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a). \$117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed. \$118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form. \$118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on

§150(b): Loose fill insulation shall conform with manufacturer's installed design *\$150(C): Minimum R-13 insulation in wood-frame wall or equivalent U-factor *§150(d): Mirimum R-13 insulation in raised wood-frame floor or equivalent U-factor. \$150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form. §150(g): Mandatory Vapor barrier installed in Climate Somes 14 or 16 \$150(1): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration. Fireplaces, Decorative Gas Appliances and Gas Log Measures: \$150(e) 1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox. \$150(e) 1B: Masonry or factory-built fireplaces have a combustion outside air intake,

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are Space Conditioning, Water Heating and Plumbing System Measures \$110-\$113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission. 13(c) 5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump solation valve, and recirculation loop connection requirements of §113(c)5. \$115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and

which is at least six square inches in area and is equipped with a with a readily

accessible, operable, and tight-fitting damper and or a combustion-air control device.

\$150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA. §150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c). \$150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.
\$150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar waterheating system, or other indirect hot water tanks have R-12 external insulation or R-16

internal insulation where the internal insulation R-value is indicated on the exterior of \$150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B. §150(j)2: Cooling system piping (suction, chilled water, or brine lines), and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A. §150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

\$150 (j) 3A: Insulation is protected from damage, including that due to sunlight,

moisture, equipment maintenance, and wind. \$150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space. MF-1R

§150(j) 4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Ducts and Fans Measures: insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used \$150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms compressed to cause reductions in the cross-sectional area of the ducts. §150(m) 2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands. \$150(m)7: Exhaust fan systems have back draft or automatic dampers.

\$150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers. §150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material. §150(m) 10: Flexible ducts cannot have porous inner cores \$150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-

2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures: §114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and

shall not use electric resistance heating or a pilot light.

\$114(b) 1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating \$114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover. \$114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods. \$150(p): Residential pool systems or equipment meet the pump sixing, flow rate, piping, filters, and valve requirements of §150(p). Residential Lighting Measures: \$150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an

efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2. §150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d). §150(k) 4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.
\$150 (k) 5: Permanently installed night lights and night lights integral to a permanently

installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by \$130(d), and shall not contain a medium screw-base socket. \$150(k) 6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of \$150(k).

\$150(k) 7: All switching devices and controls shall meet the requirements of \$150(k) 7. \$150 (k) 8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft2 or 100 watts for dwelling units larger than 2,500 ft2 may be exempt from the 50% high efficacy on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor. \$150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated

§150(k) 10: Permanently installed luminaires in bathrooms, attached and detached garages laundry rooms, closets and utility rooms shall be high efficacy. Mandatory Measures Summary Resid ential (Page 3 of 3)

EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by a manual-on occupant sensor certified to comply with the applicable requirements of §119. EXCEPTION 2: Permanently installed low efficacy luminaires in closets less than 70 square feet are not required to be controlled by a

marual-on occupant sensor.

§150 (k) 11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11. §150 (k) 12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the luminaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with

ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and \$150(k) 13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other lings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photo control not having an override or bupass switch that disables the photo control; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k) 13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.
\$150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined

according to \$130(d). \$150 (k) 15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146 \$150 (k) 16: Permanently installed lighting in the enclosed, non-dwelling spaces of lowrise residential buildings with four or more dwelling units shall be high efficacy

EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

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REVISIONS: BY:

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